

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER: Greene, D. D.

TITLE: METHOD AND APPARATUS FOR ANALYZING HEART RATE VARIABILITY

Amendment A: REMARKS

Upon entry of the present amendments, previous Claims 1 - 16 have been canceled and new Claims 17 - 25 substituted therefor. Reconsideration of the rejections, in light of the forgoing amendments and present remarks, is respectfully requested. The present amendments have been entered for the purpose of distinguishing the present invention from the prior art.

In the Office Action, it was indicated that Claims 1 - 7, 9 - 14 and 16 were rejected under 35 U.S.C. § 102(b) as anticipated by the Hoium patent. Claims 8 and 15 were rejected under 35 § U.S.C. 103(a) as being obvious over the Hoium patent.

As an overview to the present reply, Applicant has revised original Claims 1 - 16 in the form of new Claims 17 - 25. New Claims 17 - 25 express the original limitations in a more proper U.S. format, including proper antecedent bases and proper structural interrelationships throughout. Any indefinite terminology found in the original claim language has been corrected herein. In particular, new independent Claim 17 incorporates the limitations of previous independent Claim 1, along with the limitations of previous dependent Claim 3. Dependent Claim 18 corresponds to the limitations of previous dependent Claim 2. Dependent Claims 19 - 25 correspond, respectively, to the limitations found in previous Claims 4 -9. Previous Claims 10 - 16 have been cancelled herein.

In the Hoium patent, it is noted that the Hoium patent is related to the measurement of the

surface area of the three-dimensional envelope of the wavelet residuum, as recited in column 22, lines 12 - 18 of the Hoium patent. This is contrast to the measurement of the peaks or peak-to-peak intervals of the electrocardiogram signal of the present invention. Additionally, Hoium patent is related to counting the local maxima of each wavelet scale. The counts are summed over the entire spectrum of scales. Accordingly, the general smoothness of the wavelet decomposition can be presented. The subjects with and without disturbed intracardiac conduction can be differentiated. In other words, the disturbing on the wavelet can be magnified by counting the local maxima values. This procedure was described in column 26, lines 57 - 67 of the Hoium patent. In contrast, the counting and summation are not required in accordance independent Claim 17, as recited herein. This description is irrelevant to sampling and interpolation of qualified peak-to-peak intervals. There is nothing in the Hoium patent to disclose or suggest the selection of qualified peaks or peak-to-peak intervals. Additionally, there is nothing in the Hoium patent to suggest the sampling and interpolation of qualified peaks or peak-to-peak intervals and spectrum analysis in the frequency domains.

The screen operation of the method of the Hoium patent is described in column 11, lines 18 - 62. The numerals "60" and "94" relate to frequency filtering rather than the filtering of peaks or peak-to-peak intervals of the ECG signal through standard deviation calculation. The numerals 88 and 89 are related to start and end times of the accumulation from R-waves. These are irrelevant to the calculation of the peak-to-peak intervals.

Fundamentally, the Hoium patent does not anticipate the present invention, as defined by independent Claim 17. In particular, the Hoium patent fails to disclose the steps of: (1) calculating a standard deviation of heights or durations of the peaks; (2) removing the peaks or durations that

exceed a first predetermined standard deviation; (3) calculating peak-to-peak intervals of the electrocardiogram signal and filtering out unqualified peak-to-peak intervals; (4) performing sampling and interpolation of qualified peaks and peak-to-peak intervals to form consecutive peak signals; and (5) performing spectrum analysis upon the consecutive peak signals in the frequency domain. Since the elements of independent Claim 7 are neither shown nor suggested in the Hoiium patent, Applicant respectfully contends that independent Claim 17 is not anticipated by this prior art reference.

Based upon the foregoing analysis, Applicant contends that independent Claim 17 is now in proper condition for allowance. Additionally, those claims which are dependent upon this independent claim should also be in condition for allowance. Reconsideration of the rejections and allowance of the claims at an early date is earnestly solicited. Since no new claims have been added above those originally paid for, no additional fee is required.

Respectfully submitted,

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